

**A SYSTEMATIC REVIEW OF FOREIGN LANGUAGE LEARNING WITH
DISCOVERY LEARNING**

THESIS

**Presented as a Partial Fulfillment of the Requirement for Masters' Degree of
English Language Education**



**DIRECTORATE OF POSTGRADUATE PROGRAM
UNIVERSITAS MUHAMMADIYAH MALANG
SEPTEMBER 2020**

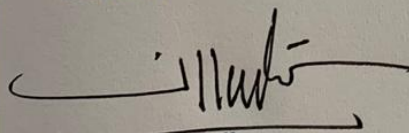
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Written by:

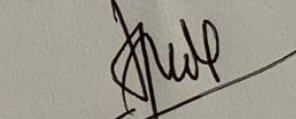
DEVIY HIDAYATI
201610560211004

Has been accepted on
Wednesday, 23rd September 2020

Advisor I


Dr. Sri Hartiningsih

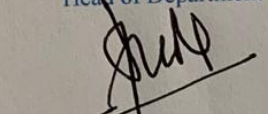
Advisor II


Dr. Estu Widodo

Director of Directorate of
Cooperative Program


Prof. M. Husein An'am, Ph.D

Head of Department


Dr. Estu Widodo

THESIS

Written by:

DEVIY HIDAYATI
201610560211004

Has been examined in front of examiners
On Wednesday, 23rd September 2020 and decided that
It has fulfilled the requirements to get
Master Degree of English Language Education
in Postgraduate Program of University of Muhammadiyah Malang

The Examiners

Chief	: Dr. Sri Hartiningsih
Secretary	: Dr. Estu Widodo
1 st Examiner	: Dr. Masduki
2 nd Examiner	: Bayu Hendro wicaksono, Ph.D

LETTER OF STATEMENT

The undersigned below, I:

Name : **DEVIY HIDAYATI**
NPM : **201610560211004**
Study Program : **Magister Pendidikan Bahasa Inggris**

Hereby, declare that:

1. The thesis entitled : **A SYSTEMATIC REVIEW OF FOREIGN LANGUAGE LEARNING WITH DISCOVERY LEARNING** is my original work and contains no one's scientific paper that may be proposed to achieve an academic degree at any universities. Besides there is no other's idea or citation except those which have been quoted and mentioned at the bibliography.
2. If the thesis is proven as a form of **PLAGIARISM** in this thesis, I am willing to accept the consequences including accepting the **CANCELLATING OF THE GRANTING OF MASTER DEGREE** and undergoing any procedures required by the prevailing law.
3. This thesis can be used for literature review which can be accessed by others freely (**NON EXCLUSIVE ROYALTY**)

Thus, this statement is made truthfully to be used as appropriate.

Malang, 23rd Sept 2020

The Writer,


DEVIY HIDAYATI

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Alhamdulillah, praise to Allah almighty, the most merciful and the most compassionate who has blessed the researcher with substantially uncountable blessing. One of those, Allah is the turner of the hearts who has turned the researcher's heart to be strongly and continually committed to finish the research rapidly. Praise and invocation are also given to our Great Prophet, Muhammad (peace be upon him) as the most influential prophet who had given us the real example of how to always stick to Allah during the ups and downs.

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Finally, the researcher would like to thank her wonderful family and friends. For the family, the researcher is beyond grateful to have a father, a mother, a husband, a brother, and a sister who always give the the valuable advise and never stop praying for the researcher's success. For all my friends, thank you for the help, the support and wonderful togetherness we shared throughout the years.

Malang, September 23rd 2020
Researcher

TABLE OF CONTENTS

TITLE PAGE	i
APPROVAL SHEET	ii
LETTER OF STATEMENT.....	iv
ACKNOWLEDGMENTS	v
TABLE OF CONTENTS	vi
ABSTRACT	vii
INTRODUCTION	1
LITERATURE REVIEW	
Discovery Learning	4
Attributes of Discovery Learning.....	5
The Principles of Discovery Learning.....	6
Teaching Step.....	8
The Advantages and Disadvantages of Discovery Learning.....	10
Review of Previous Study	12
RESEARCH METHODOLOGY	
Research Design	13
Research Instruments	13
Research Object.....	14
Data Collection.....	14
Data Analysis.....	15
RESEARCH FINDING AND DISCUSSION	
Research Findings	
Discovery Learning Assists Students in Developing English Learning.....	16

Discovery Learning in Teaching	
Speaking	16
Discovery Learning in Teaching	
Writing.....	17
Discovery Learning in Teaching Reading	18
Discovery Learning in Teaching Listening	20
The Implementation of Discovery Learning in English Classroom.....	20
Some Consideration in Implementing Discovery Learning.....	26
Discussion.....	27
CONCLUSION AND SUGGESTION	
Conclusion.....	28
Suggestion.....	29
REFERENCES	29

A SYSTEMATIC REVIEW OF FOREIGN LANGUAGE LEARNING WITH DISCOVERY LEARNING

Master of English Language Education, University of Muhammadiyah Malang

Dr. Sri Hartiningsih, M.M / NIDN: 0728036401

hartiningsih@umm.ac.id

Dr. Estu Widodo, M.Hum / NIDN: 0020056801

estu@umm.ac.id

Deviy Hidayati / NIK: 201610560211004

deviy.hidayati@gmail.com

ABSTRACT

This research focuses on discovery learning in EFL classroom. This research provides systematic review which investigates discovery learning as a tool to support the learning of a foreign language. The sample of this study are the various trends of the research done during the last years. The research has to be published between 2014 and 2019. The time frame was defined considering the 2013 curriculum that used discovery learning as a model of teaching learning process. The document were analyzed in qualitative research and formulates some stages as follows: reading collected notes, outlining key statements, classify the information, eliminates unnecessary information, and drawing the conclusion. The result of this study revealed that the use of discovery learning was effective to improve students' English learning from Junior High School to University level. In addition to this, Discovery Learning was applicable in teaching four English skills (speaking, writing, listening, reading). In addition, the example of teaching learning activities in each step of Discovery Learning was presented as a guidance for English teachers. Aside from its effectiveness in enhancing students' English achievements, this study highlighted several aspects that should be taken into account to meet the objectives of Discovery Learning. They were learning hours, amount of the students, the appropriateness of teaching material, and the type of assessment.

Keywords :Discovery learning, systematic review, 2013 Curriculum

INTRODUCTION

Background of The Study

All students come from different backgrounds with unique academic needs, culture, language, interests and attitude towards learning. Teachers are trying as hard as they could to meet students' needs in their learning. Teaching language is a complicated task for teachers and the right techniques and strategies are needed to deliver effective language learning especially in English.

English language is one of the main languages widely used all over the world. It is very important for teachers to be able to teach and arouse students' interest in following the lesson in the classroom. For some students, learning English as a foreign language is one of the most difficult subjects they have learnt.

Furthermore, there are a lot of people who look for ways of improving their English, but they do not know how and where to start. In most of the English classes, little attention is paid to the conscious efforts learners make in mastering a foreign language. Many of students do not know, neglect or pay not enough attention to how to deal with the task of learning a foreign language even after years of study; only a few students who have used a set of strategies, have been able to succeed and hence, learn the language. It is a neglected area in our language classes. Teachers should be concerned with helping students to learn how to learn the ways of effective learning of English as a foreign language and to achieve autonomy in their education (Akbari, 2014; Akbari and Tahririan, 2009; Jafari and Kafipour, 2013; Tabatabaei and Hosseini, 2014).

Since the 2013 curriculum is a new in Indonesia, it arouse some questions among the teachers how to implement it in English classroom. The curriculum is claimed as a new promising one with primary goal emphasizes that teaching is preparing Indonesian people to have life skill as an individual and citizen that is faithful, productive, creative, innovative, affective, and able to give contribution toward society and nation (Kemendikbud, 2013). It is prompted by the use of one models of teaching in order to improve the teaching development; one of them is called

Discovery Learning (DL) (Kemendikbud, 2013). The ability to conduct several stages of DL in teaching English becomes an obligation for teacher.

However, DL cannot be called new brand. The first reference about it was mentioned in the work of Jerome Bruner that argues that "Practice in discovering for oneself teaches one to acquire information in a way that makes that information more readily viable in problem solving" (Bruner, 1961, p. 26). Holesinska (2006:1) stated that DL strategy is the most practical and encouraging example of active learning strategy in which the students have to work out rules and find the text concept by themselves. Similarly, Thorsett (2002:1), defined DL as a learning situation in which the principal content of what is to be learned is not given, but must be independently discovered by the learner, making the student becomes an active participant in his learning. In the same way, Joolingen (1999:386) stated that:

DL is a type of learning where learners construct their own knowledge by experimenting with a domain, and inferring rules from the results of these experiments. The basic idea of this kind of learning is that because learners can design their own experiments in the domain and infer the rules of the domain themselves they are actually constructing their knowledge.

The solid definition comes from Balim (2009:2) who said that DL is a strategy that encourages students to arrive at a conclusion based upon their own activities and observation. So, it can be concluded that DL strategy is an active the strategy in which the facts or the contents of the topic are not given by the teacher in the beginning of the lesson directly, but it must be discovered by the learners through observing and experimenting activities as the rules of DL.

There are some advantages offered by DL strategy proposed by experts. Thorsett (2002:3) stated that DL strategy could build on the students' background knowledge and understanding. In addition, he also stated that DL can support active engagement of the students and provide high motivation because the students have opportunity to experience. Then, since this strategy provides any interesting media to be observed and also does not allow the English teacher to give any information about

the topic in the beginning of the teaching learning process, it can foster students' curiosity (Thorsett, 2002:3). This strategy can also bring out students' creativity, since there are two explorative activities taken by them namely observation and experimenting (Nutting, 2013:8).

Several investigations have tried to identify the advantages that the use of DL, such as increased opportunities for communication, collaborative interaction, and independent learning. Teacher can use DL that can help to increase learner vocabulary, improve reading, improve speaking skill and listening comprehension.

However, there is an absence of systematic reviews that shed light on studies investigating the use of DL for learning a foreign language. Therefore, the aim of this paper is to report on a systematic review of different projects that investigate DL as a tool to support the learning of a foreign language, examining the various trends of the research done during the last years.

In reference to the background of study, the present review is based on the following general research questions:

1. Does DL help students to develop their English learning?
2. Which are the major of teaching steps in conducting Discovery Learning (DL) identified?
3. What are some considerations in implementing Discovery Learning (DL)?

The result is expected to be useful for educators or teachers to give more insights about the DL that can help students to develop their English learning. Through this study, educators are expected to understand how students develop their English learning by using DL. As a result, the study can become a consideration for the next researcher to find the effective ways to cope with the problem.

This research focuses on DL in EFL classroom. This research uses systematic review which investigates DL as a tool to support the learning of a foreign language. The sample of this study are the various trends of the research done during the last years.

There are several terms used in this study, and to avoid misunderstanding and

confusion, it is considered necessary to define them all as follows:

1. Discovery learning (DL)

Discovery learning method is a type of method where the learners construct their own knowledge by experimenting with a domain, and inferring rules from the result of these experiments. (Joolingen 1998).

2. Systematic review

A systematic literature review attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question (Cochrane Library, 2017).

3. 2013 Curriculum

The curriculum is claimed as a new promising one with primary goal emphasizes that teaching is preparing Indonesian people to have life skill as an individual and citizen that is faithful, productive, creative, innovative, affective, and able to give contribution toward society and nation (Kemendikbud, 2013).

REVIEW OF LITERATURE

Discovery Learning

One of the cognitive instructional models is discovery learning. Discovery learning itself was firstly introduced by Jerone Bruner in 1960 (thorsett, 2002 : 2). Holesinska (2006 : 1) stated that a discovery learning strategy is the most practical and encouraging example of an active learning strategy in which the learners have to work out rules and find the concept by themselves. Similarly, Thorsett (2002 : 1) defined discovery learning as a learning situation in which the principle content of what is to be learned is not given, but must be independently discovered by the learners, making the learners become active participants in their learning. In the same way, Joolingen (1998 : 386) stated that:

Discovery learning is a type of learning where learners construct their own knowledge by experimenting with a domain and inferring rules from the results of these experiments. The basic

idea of this kind of learning is that because learners can design their own experiments in the domain and infer the rules of the domain themselves they are actually *constructing* their knowledge.

The same definition comes from Balim (2009 : 2) who said that discovery learning is a strategy that encourages students to arrive at a conclusion based upon their own activities and observation. Thus, it can be concluded that a discovery learning strategy is an active strategy in which the facts or the contents of the topic are not given by the teacher in the beginning of the lesson directly, but it must be discovered by the learners through observing and experimenting activities as the rules of discovery learning.

In discovery learning, students construct knowledge based on new information and data collected by them in an explorative learning environment (Njoo in Balim, 2009 : 8), it is suitable with the process of understanding vocabulary. The prior knowledge that the students obtain from the explorative process will help them in comprehending English skill. They will find it easier to connect their mind with the English because they earn concepts in the beginning of the lesson through observing by themselves. Therefore, discovery learning can be called as an active learning, here, strategy for active learning has a purpose to make independent and creative growing in studying, so that students can make innovations.

In Indonesia, the stages of discovery learning strategy itself are divided into two steps namely *preparation* and *implementation* (Stephanus, 2013). In *preparation* step, there are seven things that the teachers should do. Those seven things are: 1) establishing the goals, 2) identifying students' attitude (such as prior knowledge, interest, and the level of the students, or the way of learning), 3) selecting learning material that should be learnt, 4) choosing topics, 5) elaborating the material, 6) rearranging the topics from the simple to the complex ones and from abstract to concrete, and 7) preparing assessment. While for the *implementation* step, there are six phases: *stimulation*, *problem statement*, *data collection*, *data processing*, *verification*,

and *generalization*.

Attributes of Discovery Learning

Bicknell-Holmes and Hoffman (2000) describe the three main attributes of discovery learning as 1) exploring and problem solving to create, integrate, and generalize knowledge, 2) student driven, interest-based activities in which the student determines the sequence and frequency, and 3) activities to encourage integration of new knowledge into the learner's existing knowledge base.

The first attribute of discovery learning is a very important one. Through exploring and problem solving, students take on an active role to create, integrate, and generalize knowledge. Instead of engaging in passively accepting information through lecture or drill and practice, students establish broader applications for skills through activities that encourage risk-taking, problem solving, and an examination of unique experiences (Bicknell-Holmes & Hoffman, 2000). In this attribute, students rather than the teacher drive the learning. Expression of this attribute of discovery learning essentially changes the roles of students and teachers and is a radical change difficult for many teachers to accept (Hooks, 1994).

A second attribute of discovery learning is that it encourages students to learn at their own pace (Bicknell Holmes & Hoffman, 2000). Through discovery learning, some degree of flexibility in sequencing and frequency with learning activities can be achieved. Learning is not a static progression of lessons and activities. This attribute contributes greatly to student motivation and ownership of their learning.

A third major attribute of discovery learning is that it is based on the principle of using existing knowledge as a basis to build new knowledge (Bicknell-Holmes & Hoffman, 2000). Scenarios with which the students are familiar allow the students to build on their existing knowledge by extending what they already know to invent new ideas.

The Principles of Discovery Learning

There are principle of discovery learning:

- a. In discovery learning, students are active. Learning is not defined as simply

absorbing what is being said or read, but actively seeking new knowledge. Students are engaged in hands-on activities that are real problems needing solutions. The students have a purpose for finding answers and learning more (Mosca & Howard, 1997).

b. The focus shifts from the end product, learning content, to the process, how the content is learned. The focus in discovery learning is learning how to analyze and interpret information to understand what is being learned rather than just giving the correct answer from rote memorization. Process-oriented learning can be applied to many different topics instead of producing one correct answer to match one question that is typically found in content oriented learning. Discovery learning pushes students to a deeper level of understanding. The emphasis is placed on a mastery and application of overarching skills (Bonwell, 1998).

c. Failure in discovery learning is seen as a positive circumstance. Discovery learning emphasizes the popular lesson learned from Thomas Edison. Thomas Edison is said to have tried 1,200 designs for light bulbs before finding one that worked. Discovery learning does not stress getting the right answer. Cognitive psychologists have shown that failure is central to learning. The focus is learning and just as much learning can be done through failure as success. In fact, if a student does not fail while learning, he or she probably has not learned something new.

d. An essential part of discovery learning is the opportunity for feedback in the learning process. Student learning is enhanced, deepened, and made more permanent by discussion of the topic with other learners. Without the opportunity for feedback, learning is left incomplete. Instead of students learning in isolation, as is typical in the traditional classroom where silence is expected, students are encouraged to discuss their ideas to deepen their understanding (Schank & Cleary, 1994).

e. Incorporating all of these differences, discovery learning provides for deeper learning opportunities. Learners internalize concepts when they go through a natural progression to understand them (Papert, 2000). Discovery learning is a natural part of human beings. People are born with curiosities and needs that drive them to teach. Infants learn to talk by discovery. They listen to others around them talk, mimic sounds,

and try putting together the pieces of language they have discovered.

Teaching Steps

According to Mendikbud (2013), there are several steps of Discovery Learning including:

- a. Setting learning goals
- b. Identify the characteristics of students (prior knowledge, interests, style learning, and so on)
- c. Choosing the subject matter
- d. Determining the topics that students need to learn inductively (from examples of generalization)
- e. Developing learning materials in the form of examples, illustrations, task and so on to be learned by the students.
- f. Setting the lesson topics from simple to complex, from concrete to the abstract, or from the stage enactive, iconic to the symbolic.
- g. Conducting assessment process and student learning outcomes.

Besides steps that are mentioned above, Mendikbud (2013) also proposes some Application Procedure of Discovery Learning Method. According to Syah (2004: 244) in applying the Discovery Learning method in the classroom, there some procedures that should be implemented in the teaching and learning activities in general as follows:

a. *Stimulation (Stimulation / Giving Stimuli)*

Stimulation at this stage serves to provide the conditions of learning interactions that can develop and assist students in exploring materials. In this case Bruner in Mendikbud (2013) provides stimulation by using questioning technique. Asking questions to the students can expose students to the internal conditions which encourage their exploration. Thus, a teacher must master the techniques in providing stimulus to the students in order to enable students to explore the destination. Related to the teaching vocabulary skill, the teacher asks the students a question for example “Have you ever go to hospital?” or “Are there objects that you don’t know in English?”. Besides, the teacher can show the

pictures of some Hospital objects and public places to the students and ask them to imagine those places. By giving such kind of questions and pictures, it will stimulate the students mind to remember their experience.

b. Problem Statement (Statement/Identify the Problem)

The next step is giving an opportunity to the student to identify as many agendas as possible which are relevant to lesson material, then one of them is selected and formulated in the form of hypotheses (answers while the question of the problem) (Syah 2004: 244), while the problem chosen then will be formulated in the form of a question, or hypothesis, i.e. statement as a temporary answer to the questions proposed.

c. Data Collection

When the exploration is ongoing, the teachers also give the opportunity to the students to gather as much information as possible that is relevant to prove the hypothesis whether it is true or not (Syah, 2004: 244). At this stage, the answer of hypothesis questions will be looked for to prove the truth of the hypothesis itself. In this stage, the teacher asks students to write a list what are their experiences, what are their activities in that place, or when it happened. By looking up to the picture, it will help the students to easily remember their experience.

d. Data Processing

According to Syah (2004: 244) data processing is the activity of processing the data and information that has been obtained by the students either through interviews, observation, or others. All the information as a result of readings, interviews, observation, and so on then will be processed, randomized, classified, tabulated, even if it is calculated in a certain way and interpreted on a given confidence level (Djamarah, 2002: 22).

e. Verification (Proof)

At this stage the students perform a careful examination to prove whether true or not the hypothesis determined by finding the alternatives and associated with the outcome of data processing (Syah, 2004: 244). Verification intended to make the process of learning will run well and creatively if the teacher provides opportunities for students to find a concept, theory, rule or understanding through examples that they might be encountered in their life.

In this phase, the role of the teacher is giving the materials and example about recounts text to each of the student. Then, the teacher asks students to observe and study by themselves. By this step, the students have experience in discovering the concept, theory and rule by themselves. The teacher also lets the students to find out other information and other example about recount text from other sources. It can be from book or internet. By finding other information, it will help the students to strengthen their idea in developing their draft.

f. Generalization (Interesting Conclusions / Generalization)

The generalization / draw the conclusion stage is that the process of drawing a conclusion which can be used as a general principle and applies to all events or the same problem, with regard to the result of verification (Syah, 2004: 244). Based on the results of the verification, it is formulated the principles underlying the generalization. After draw conclusions, the students should pay attention to the process of generalization that stressed to the importance of mastering the lesson over the meaning and rules or principles underlying the extensive experience of a person.

The advantages of Discovery Learning

In general, Discovery Learning method may have several advantages as proposed by Mendikbud 2013. They are as follows:

- 1) Helping students to improve and enhance the writing skills and cognitive processes

- 2) The knowledge gained through these methods is very personal and powerful because can strengthen the understanding and retention
- 3) This method allows the students develop rapidly and in accordance with own pace.
- 4) Helping the students to direct their own learning activities involving their wits and their own motivation.
- 5) This method can help students reinforce the Vocabulary skill itself, because they have a confidence in collaboration with others.
- 6) This method is centered on students and teachers alike participate actively state the ideas. Even the teachers can act as a student, and as a researcher in the discussion part.
- 7) Helping students to overcome skepticism because the discovery learning leads to final and certain truths.
- 8) Encouraging students to think and formulate their own hypotheses
- 9) Providing decisions that are intrinsic.
- 10) Learning situation becomes more aroused.
- 11) Students learn to utilize various types of learning resources.
- 12) It can develop their individual talents and skills.

The Disadvantages of Discovery Learning

According to Mendikbud 2013, some advantages of using Discovery Learning Method are:

- 1) This method raises the assumption that there is a readiness of mind to learn. The students who have low intelligent, will have difficulty in thinking or expressing abstract or relationships between concepts, written or oral, and finally will cause frustration.
- 2) This method is not efficient to teach many students, because it will take a long time to help them find a theory or solving other problems.
- 3) Teacher and students who usually applied the old method will be difficult to understand the new concept in the new method. Consequently, the teaching

learning process does not run

4) Teaching discovery is more suitable for developing understanding, whereas to develop aspects of concepts, skills and overall emotional still have less attention.

5) In some disciplines, such as Science, it still lack of facilities for measuring ideas expressed by the students

6) Not provide opportunities to the students to find and discover the material of lesson they like because it has been pre-selected by the teacher.

Review of Previous Study

There are some studies conducted in systematic review of discovery learning in EFL. Related to this research, the researcher chooses some literatures of previous studies which are relevant:

1. Thesis under title *A Systematic Review of Second Language Learning with Mobile Technologies* by Veronica Persson and Jalal Nouri, Stockholm University, Sweden. This research provides a systematic literature review of the research done in mobile assisted second language learning (MASLL) published since 2010. 54 articles were selected using predefined selection criteria. The documents were analyzed and coded using the categories: educational form and level, study design, location, context, role of technology, pedagogical practice and learning impact.

The differences between their research and this research is the subject. They used mobile technologies, while this research used discovery learning. The similarities that both use a systematic review to analyze.

2. Thesis under title *The Use of Discovery Learning Model to Improve Students' Descriptive Text Writing at VIIA Class of MTs NU 08 Gemuh Kendal* by Laelatul Mukharomah, IAIN Walisongo Semarang. In this research, the teacher had strategy to teach students' writing by using discovery learning to find out how successful the students' writing skill would be by using discovery learning.

The difference between her research and this research is research design. She conducted action research as the research methodology, while this research used library research. The similarities are both focus on discovery learning.

RESEARCH METHOD

This study focuses on the role of Discovery Learning teaching method in improving students' English achievement. In order to dig out an in-depth information, this study engages qualitative research design. Ary & Sorensen (2010) pointed out that qualitative design deals with the description of research data in the form of words or pictures rather than numbers and statistics. In addition, Endraswara (2011) emphasizes the important features of qualitative design namely; (1) the researcher is the key instrument that reads the literature thrifty, (2) the research is done in descriptive way which elaborated in the form of words than statistical numbers, (3) the process of the research is priority than result due to the literature establishes interpretations.

Research Design

In attempt to address the research questions comprehensively, this study employs library research. In this context, the researcher explores several empirical studies to elaborate a rich data about how does Discovery Learning becomes one of teaching methods in improving students' English performance. Descriptive qualitative research due to the data of this study are in the form of written description. Zeid (2004) explained that library research is a research that used library sources to collect and analyze the data. Conducting library research, the researcher needs to integrate her own ideas and the related sources to establish the result of the study.

Research Instrument

There must be an instrument in a research. It influences the data which are obtained. Instrument means equipment for collecting the data using a method (Arikunto, 2002). Based on the statement, instrument plays important role in conducting a research that is to gather the data accurately. In qualitative study, there are several kinds of research instrument such as open-ended questionnaire, interview,

observation, and documentation (Creswell, 2003). This study employs documentation as an instrument to collect a comprehensive data. The documentation is about empirical findings of other researchers which are focused on the investigation of Discovery Learning (DL) teaching method.

In attempt to find out sufficient data related to the questions of this study, several source of data collected are the electronic databases and journals. The selected source of data for this library research are: Lingua Cultura, Tell Journal, Dinamika ilmu, International Journal of Innovation and Scientific Research, and ScienceDirect. In this context, the researcher gathers the data through several sources in order to elaborate an in-depth description of each research question. Therefore, it can be said that this study revealed a comprehensive data to present.

Research Object

Due to the data of this study are several scientific studies and the source of data are from several journal articles, it is essential for the researcher to consider several aspects such as the authority, accuracy, objectivity, and currency of the information. Accordingly, the journal article have to fulfill some criteria namely;

1. The research must be an empirical study.
2. The investigation has explicitly address foreign language learning, as well as the use of discovery learning.
3. The research has to be published between 2014 and 2019. The time frame was defined considering the 2013 curriculum that used discovery learning as a model of teaching learning process.
4. The research must be written in English.
5. The research must have an abstract. The abstract will be used to select relevant research during the systematic review process. The review focus only on discovery learning (DL).

Data Collection

In order to answer the research questions of this study, the researcher arranges several steps orderly such as;

1. Searching several research. The researcher used some key terms namely; discovery learning (DL), foreign language learning.
2. Reading and understanding the research. In this step, the researcher read the text carefully to understand deeply about the objectives and findings of the related research.
3. Identifying all the findings which containing the application of Discovery Learning (DL) in English classroom.
4. Taking notes. The researcher classify the identified data into three categories namely; the role of Discovery Learning (DL) toward students' English learning, the implementation of Discovery Learning (DL), and some considerations needed.

Data Analysis

According to Creswell (2012), in analyzing qualitative data, the researcher should be able to understand deeply about how to make sense of text and images so that the research questions meet the comprehensible answers. Thus, the researcher formulates some stages as follows.

1. Reading the collected notes. In this stage, the researcher also researching some additional information in journal articles.
2. Outlining key statements in attempt to form classifications which are related to the research questions. In this stage, the researcher eliminates unnecessary information.
3. Describing the classified data into a paragraph in order to directly answer the research questions.
4. Drawing the conclusion of the data analysis.

RESEARCH FINDINGS AND DISCUSSION

Research Findings

The findings are explained in accordance with the following statement of the problems; (1) Does Discovery Learning help students to develop their English

learning? (2) How does English teacher implement Discovery Learning in classroom?
(3) What are some considerations in implementing Discovery Learning?

Discovery Learning Assists Students in Developing English Learning

The application of Discovery Learning in English classroom is one of the alternative solutions to encourage students' learning interest and improve their English achievements as well. Discovery Learning is claimed as the appropriate teaching technique in enhancing both productive and receptive skills of the students. Thus, it is crystal clear that Discovery Learning is highly recommended to apply by English teacher in order to facilitate students in sharpening their English skills. The effectiveness of Discovery Learning in English classroom describes below.

Discovery Learning in Teaching Speaking

The study conducted by Mufida, Hafifah, and Mayasari (2015) at the First Grade of SMP Institut Indonesia in Surabaya found five steps of Discovery Learning done by English teacher in teaching speaking. By applying the steps, students become more active to speak up. According to some students, they were interested in participating the whole activities. The steps were; stimulation, problem statement, collecting data, processing data, verification, and generalization. Students were get involved from the first to the last step of activities. Students were triggered to learn independently through several activities orderly. In this context, students were not left to think alone out of teacher's control. However, applying discovery learning, English teacher of SMP Institut Indonesia facilitate students to understand several expressions and speak it up confidently.

Another study conducted by Palupi (2015) toward the tenth grade students at SMKN 2 Kediri. The investigation in pre test showed that the students' speaking ability was low. The researcher constructing the treatment in experimental group by applying five steps of discovery learning. The result of the post test showed that the scores of the students were increasing after being taught by discovery learning. Based on the t-test result, there is significant effect toward students' speaking achievement. In the same vein, Hasibuan (2018) conducted an experimental study in attempt to test the

effectiveness of discovery learning technique toward students' speaking skill. The population of the study was the X grade students at SMK PAB 8 Sampali which consist of 177 students and 70 students took as the sample. The on-going process of utilizing Discovery Learning was presented standard effect. In the last meeting, the effect was significant. The students felt comfortable to speak in English although their pronunciation was still wrong. This study agreed that there were significance effect of utilizing Discovery Learning on the students' speaking achievement. The influenced of Discovery Learning was 98,74% and 1,26% by other factors.

Due to several studies presented above, it can be claimed that Discovery Learning provides several advantages to achieve the teaching learning speaking objectives. In this context, English teacher should be able to provide a huge chance for students to speak up in each steps of Discovery Learning. Then, students may get used to perform speaking ability in English continuously.

Discovery Learning in Teaching Writing

Prawerti (2014) conducted experimental study to examine the effectiveness of two different teaching techniques such as Discovery Learning and Direct Instruction toward the attainment of teaching learning writing. The population was the tenth grade of SMAN 1 Durenan Trenggalek in the Academic Year of 2014/2015. The result proposed that Discovery Learning is more effective than Direct Instruction to teach writing. The mean score of the students who are taught by using Discovery Learning Method (80.36) is higher than those taught by using Direct Instruction Method (77.83). Based on the result of the study, the point that should be consider is the significant difference between Discovery Learning and Direct Instruction at the same time. In attempt to create a good writing product, students need several steps to dig out creativity. Each step of Discovery Learning provides the students chance to explore their own ideas.

Another experimental study focusing on improving students' writing skills by using Discovery Learning conducted by Sarimanah, Dewi, Efendi, Suhendra, Nurul, and Soeharto (2019). The population was the third grade students of MTs Syarikal

Islam 2 Kalapanunggal. The average score of pre-test was 53,5 which still refers to the low level; the highest is 68, and the lowest is 44. The low score was caused by the less of systematic way in students' writing product. After conducting several cycles of treatment by using Discovery Learning, the post-test average score was 84,3 with the level of affordability; the highest is 92, and the lowest is 74. Then, students were able to understand and create a text with the appropriate concept and structure. However, there were several obstacles faced by the students namely; determining vocabulary according to the content or topic of discussion, finding and collecting the relevant information in arranging the text.

Regarding the explanation above, it can be said that Discovery Learning technique is an aid to improve students' writing ability in both senior and junior high school level. There are several systematic ways to be done in order to create a good text. For example, students need to make an outline, read relevant sources, make a note and write a text by considering the generic structure of the text. Therefore, several steps (stimulation, problem statement, data collection, data processing, verification and generalization) of Discovery Learning were meet the needs of writing procedures. Indeed, writing in a foreign language is not as easy as we thought. Challenges may be faced by the students due to the lack of vocabulary mastery and less of ability in reading relevant resources. As proven by one of the study displayed previously, the problem is found in the level of junior high school students. However, Discovery Learning trains students' cognitive skill to find out and solve problems independently. It was still cover the underlying problems. Overall, the application of discovery learning has proven to be effective enough to improve students' writing ability.

Discovery Learning in Teaching Reading

A survey study conducted by Tampubolon (2017) aimed to discover the students' perspectives toward on the use of Discovery Learning on reading comprehension class. Besides, this study was intended to examine whether the students are interested in using discovery learning strategy on improving their reading comprehension. The subject was students of the English Teaching Study Program

(ETSP), Christian University of Indonesia. The survey showed that 63% of the students agreed and strongly agreed that Discovery Learning improved their critical reading, 64% of them agreed and strongly agreed that Discovery Learning assisted the development of their pronunciation, 65% agreed and strongly agreed that Discovery Learning increased their grammar, and 78% of students agreed and strongly agreed that Discovery Learning enriched their vocabulary.

The description above conveys the effectiveness of Discovery Learning in the level of university students. The researcher gained variant and rich data due to students in higher education level had pass several experiences in learning English especially in reading skill. Thus, exploring their perspectives is indeed provides detail information about several aspects that significantly improved after being taught by Discovery Learning in reading class. Students claimed that Discovery Learning improves their critical reading, pronunciation, grammar, and vocabulary mastery. Thus, it can be said that Discovery Learning also need to apply in higher students' level.

In addition, Hajar (2016) conducted classroom action research to increase the students' reading comprehension through Discovery Learning. The subject was students of eighth grade of MTs NU Salatiga. The action research conducted in two cycles. The mean score of pre-test in cycle 1 was 22.88 with the passing grade 3.03%. In post-test, the mean score was 37.05 with the passing grade was 51.52 %. In the cycle 2, the mean of pre-test was 68.26 with the passing grade 36.36%. The total mean of post-test was 79.09 with the presentation was 75.76%. Then, the researcher claimed that the application of Discovery Learning to increase students' reading comprehension was obviously successful.

Sharpening students' reading ability in junior high school level is highly needed in order to build up students' reading interest and understanding toward English text. In addition, it may help students to improve their critical thinking so that they can easily comprehend several kinds of English text in the next level of education. To sum up, it is important for English teacher to implement Discovery Learning as one of the teaching methods in teaching reading.

Discovery Learning in Teaching Listening

An investigation toward the application of Discovery Learning in teaching listening conducted by Hanafi (2016). The subject was the students of class X IPA 5 Public High School 2 Jember. The researcher gained the data through experimental design. There were three emphasized aspects of listening activity namely cognitive field of memory, understanding, and application. In line with this, the researcher sets listening tasks in the form of multiple choice, writing the alphabet of the responses, and selecting the right picture. The result showed that there is a significant improvement on listening outcomes of the students with the implementation of discovery learning model. The median score of listening outcomes is increasing from the pre-test score ($Md = 80$) to the post-test ($Md = 86.7$). These result indicates that the target of the study is reached, where 85% of students reached KKM (minimum criteria of success) with a value of 80.

The study explained formerly has proven that Discovery Learning is indeed effective to improve students' listening ability. Stages in Discovery Learning that consist of stimulation, problem statement, the data collection, the data processing, verification and generalization obviously fit in the three phase listening (pre-activities, main activities, post-activities). The combination of each stage of Discovery Learning is a way to help students improve their listening ability. However, the investigation focusing on the application of Discovery Learning in the teaching of listening is limited. It is hoped that the example of how Discovery Learning facilitates students in improving their listening ability as explained above may trigger other researchers to conduct the similar research. Then, there will be several rich scientific data about the effectiveness of Discovery Learning especially in listening class.

The Implementation of Discovery Learning in English Classroom

In accordance with numerous studies have proven the effectiveness of Discovery Learning in teaching English, it is important to take into account the example of how English teachers utilize Discovery Learning in English classroom. The Implementation of Discovery Learning is presented in each skill (speaking, writing,

reading, listening).

Figure 1. The Implementation of Discovery Learning in Speaking Class

Discovery Learning	Speaking Classroom Activities
Stage	by Mufida, Hafifah, and Mayasari (2015)
Stimulation	Students were invited to observe the given picture.
Problem Statement	Students were encouraged to communicating and questioning their classmates about the material orally.
Collecting Data	The teacher delivered some exercises about daily activities. After the students had finished doing the exercises, the teacher invited each student to present their work in front of classroom.
Processing Data	Students need to process data derived from expressing their own day's activity.
Verification	Teacher gave some feedback.
Generalization	Teacher asked the students to conclude the activities.

The laid out table above is the implementation of Discovery Learning in Speaking class of First Grade students at SMP Institut Indonesia. As presented in figure 1, English teacher implements every single stage of Discovery Learning properly. In the stimulation stage, it is important to skip the explanation from the teacher about the teaching material. It is a chance for the teacher to encourage students to analyze the teaching material by observing the given picture. By providing a chance for students to identify the picture, automatically students will ask their friends' opinion. Students may communicate each other to find the temporary answer. It needs to consider that the communication and interaction happened in the problem statement stage.

The next step, students were asked to do a task and present it in front of classroom. In this step, teacher's role was still just guiding the students. It means that students do the task based on the result of their own analysis toward the displayed picture in the stimulation step. As described in figure 1, it is clear to stated that the

chance for teacher in giving feedback and explanation was only in the stage of verification. It was obviously a good way to implement Discovery Learning in speaking activities due to the whole stage provide a huge opportunity for students to think critically and communicate their idea. In addition, students may still receive teacher's feedback to improve their speaking ability.

Figure 2. The Implementation of Discovery Learning in Writing Class

Discovery Learning Stage	Writing Classroom Activities by Mushtoza (2016)
Stimulation	Teacher was displaying picture provided texts. Students was intended to identify and write about the picture.
Problem Statement	Students were invited to questioning their classmates and formulating hypothesis as a temporary answer to questions.
Collecting Data	Students were divided into groups to search several sources such as dictionary, book, and internet instead of read a single text book only. In this step, students have to build a group discussion, and write report text.
Processing Data	Students were collecting and presenting their written products.
Verification	Teacher gave correction and feedback toward students' writing.
Generalization	Teacher and students drew the conclusion.

In writing class, teacher did not only displayed a single picture in the stimulation step. A picture with the written text was presented in order to dig out students' understanding about the kind of writing text to learn. Students were allowed

to discuss with their classmates to identify the text to learn. The next step was students were asked to search and collect several information from other sources related to the material. In this step, teacher lets the students to do in a team work. Indeed, it was not easy searching for information about the written text that had not been explained yet by the teacher. However, by working in a group, students may share information and discuss it together in order to create a good written product.

In the stage of processing data, students need to report their writing project and will be corrected by the teacher in the stage of verification. Teacher gave feedback in order to increase students' understanding and skill of writing the report text. In addition, students may get to know the difference of report text and the other texts. Finally, in the stage of generalization, students were able to make their own conclusion about some steps that should be emphasize in order to write a good report text.

Figure 3. The Implementation of Discovery Learning in Reading Class

Discovery Learning Stage	Reading Classroom Activities by Hajar (2016)
Stimulation	Teacher was distributing descriptive text to the students. Students were asked to read the text.
Problem Statement	The teacher asked the students, "Anyone knows what descriptive text is?". Some students answered, "A text which describes a person, a thing, and place". Teachers divided the students into five groups.
Collecting Data	Students were asked to read the text and understand the material. In this step, teacher helped the students to understand and identify text by conducting question and answer section.
Processing Data	The students began to do the given reading task.

Verification	Teacher asked the students to collect and correct the task together.
Generalization	Students were asked to summarize about descriptive text. Teacher gave feedback for students' statement.

There is significant distinction among the activities in each stage of Discovery Learning in Reading and the other skill (speaking and writing). As described in figure 3, the stimulation stage of reading activity was the teacher exactly distributing descriptive text to the students. In this stage, students were asked to read and identify the text. There was no picture to identify as provided in speaking and writing activity. Indeed, in it is a proper strategy to stimulate students' reading ability by delivering reading text. However, it is important to consider the length and the complexity of the text. In stimulation step, a simple example of descriptive text is convenient enough for students to identify. After providing students chance for reading the text, it is essential to ask students' understanding toward the text. As stated in the figure 3, some students were capable to recognize the text and explain the definition of descriptive text.

In collecting data stage, students were asked to read and collect some information that they do not understand. In this stage, teacher's role was needed to clarify students' misconception. In the next stage, students were asked to do the reading task without teacher's assistance. In this stage, teacher may identify each students' understanding. In order to build up students' interaction, it is necessary to involve students in the correction section. Then, every student may be capable to draw their own conclusion toward learning material in the last stage.

Figure 4. The Implementation of Discovery Learning in Listening Class

Discovery Learning Stage	Listening Classroom Activities by Hanafi 2016
Stimulation	students were invited to recognize and understand the given

	example of conversation.
Problem Statement	Students were given a chance to ask questions and give their opinions about the conversation.
Collecting Data	Teacher asked the students to train their understanding in dialogue based on the listening material.
Processing Data	Students started the listening process.
Verification	Teacher was guiding students to check their work. Students have a chance to know their understanding.
Generalization	Teacher guiding students to make some notes about what they have achieved and what they need to develop further.

The stimulation stage in listening class was similar to the reading class in which there was no visualization. In listening activity, students were intended to focus on listening and understanding the given audio. After listening, students were asked to arguing what they have received from the audio. It is important for the teacher to analyze students' initial ability in order to give the proper treatment in the next stage. Students were also allowed to questioning the teacher. In this stage, it is essential for the teacher to reply the audio in order to indicate some point that have been discussed. So, students will be easier to acquire the audio in the next stage. In collecting data stage, students were given a dialogue to listen and do the task.

In the verification stage, by the assistance of the teacher, students examine their works. Students were attempted to recognize the spoken and written language at the same time. In this stage, it is important for the teacher to reply the audio step by step based on the given task. Then, students will focus on understanding the content of the audio and write some corrections toward their works. Students will get to know their own listening ability and may conclude some considerations to improve their listening achievement.

Some Considerations in Implementing Discovery Learning

In accordance with numerous studies have proven the effectiveness of Discovery Learning in teaching English, also several example of teaching activities in each stage of Discovery Learning, it is important to take into account certain factors. In this context, there are some considerations to emphasize in order to utilize each stage of Discovery Learning properly. The considerations are:

1. Time allocation. It is in line with the data found by Mushtoz (2016), the implementation of Discovery Learning need an extra time especially in data processing and verification stage. Based on the observation, in data processing stage students need extra time to think critically about several sources that had been collected. In addition, teacher need additional time to give feedback toward students' individual assessment. Accordingly, it needs a good preparation for applying Discovery Learning due to there are five stages to pass. In Discovery Learning teaching method, teacher's role is facilitate students to learn independently. In every meeting, it is important for the teacher to inform students about what they have to prepare for the next meeting. So, students will be well-prepared for joining the classroom activities in every stage of Discovery Learning. In addition, teacher may be easier to make use of the teaching hour effectively without some missing information to share.
2. The number of the students. According to the study conducted by Rahmi and Ratmanida (2014), in applying Discovery Learning teacher faced the problem in guiding each student intensively due to the large number of the students. Indeed, conducting Discovery Learning teacher should be thorough enough toward students' participation because the emphasized concept of Discovery learning is students' centered approach. In fact, there are many schools especially in Indonesia have a large number of students in a class. This situation may become such a challenge in implementing Discovery Learning. Therefore, group discussion and peer assessment are needed in order to overcome the large

number of the students. Besides, teacher should be able to make sure that students are obviously get involved with the teaching material by conducting one-on-one interaction between teacher and students.

3. The complexity of the teaching material. Mufida, Hafifah, and Mayasari (2015) found that one of the factors in the effectiveness of Discovery Learning was the teacher's creativity in preparing teaching material. It was showed that the materials developed by the teacher were suitable with the students' need and goal. In this context, teacher is intended to deliver the teaching material based on each stage of Discovery Learning. For example, in the stimulation stage, students are given a simple topic or visualization to identify. In the next stage, teacher is allowed to provide more complex task so that students are encouraged to learn deeply and think critically. Moreover, teacher should be able to create an interesting teaching material so that students may become enthusiastic in participating the classroom activities.
4. The type of assessment. Mushtoza (2016) found that English teacher always observed students' achievement one by one in every meeting. It becomes one of the crucial aspects in applying Discovery Learning effectively. It is essential to consider that the objective of Discovery Learning method is to build up students' motivation in learning independently. The focus of Discovery Learning should be students' achievement in each step. Therefore, formative assessment is highly recommended than summative assessment. Teacher need to focus on observing students' process of learning rather than the final result of students' work.

Discussion

In line with the findings of this study, there are several aspects to discuss regarding the identified similarity and diversity among the above studies. First, the

similarity found among the objects of this study was all the studies implemented each stage of Discovery Learning from the stimulation to the generalization step. It was in line with the concept of Discovery Learning proposed by Syah (2004), there are some procedures in applying Discovery Learning in the classroom namely stimulation, problem statement, data collection, data processing, verification, and generalization. In addition, Indonesian Ministry of Education (2013) proposes the similar procedures of Discovery Learning Method.

Second, the identified diversity among the objects of this study was the type of learning techniques. Implementing Discovery Learning in speaking class, Mufida, Hafifah, and Mayasari (2015) utilized individual learning technique. Students were asked to present their work consecutively in front of classroom. Besides, Hanafi (2016) evaluated students' listening skill by using individual work as well. On the other hand, group discussion technique was applied in writing and reading class (Mushtoza: 2016 and Hajar: 2016).

In this context, both individual and group discussion learning techniques are need to utilize in order to provide a chance for students to active participate the classroom activities. Teacher needs to evaluate each students' individual achievement in attempt to prepare further teaching material based on the students' level of understanding. Besides, the concept of Discovery Learning is students need to explore and understand the knowledge by their own. Therefore, the aspect that should be concerned in implementing Discovery Learning method is teacher need to trigger students' critical thinking. In this context, group discussion learning technique become essential to utilize during the class. As Walker (2003) said that the classroom discussion may promote students' critical thinking. Through the exchange of dialogues with each other, students may improve their language skills and enrich their knowledge.

CONCLUSION AND SUGGESTIONS

Conclusion

In accordance to the findings along with the discussion presented in the former chapter, conclusion of this study proposed. This study claimed that Discovery Learning

obviously help students to develop their English learning. This study showed that Discovery Learning was effective to improve students' English learning from junior high school to university level. In addition to this, Discovery Learning was applicable in teaching four English skills (speaking, writing, listening, reading). In addition, the example of teaching learning activities in each step of Discovery Learning was presented as a guidance for English teachers. Aside from its effectiveness in enhancing students' English achievements, this study highlighted several aspects that should be taken into account to meet the objectives of Discovery Learning. They were learning hours, amount of the students, the appropriateness of teaching material, and the type of assessment.

Suggestions

In regards to the results of this study, several suggestions are formulated for English teachers and further researchers. First, it is essential for English teachers to implement Discovery Learning as their teaching method to enhance students' English achievements. In line with this, English teachers need to understand the main concept and the objectives of Discovery Learning method. In attempt to implement Discovery Learning effectively, English teachers need to fulfill the suggested aspects (time allocation, number of the students, teaching material, and type of assessment). Second, the limited of scientific studies toward Discovery Learning become one of the problem to cover. Accordingly, it is necessary for further researcher to investigate deeper about the implementation of Discovery Learning in English complement subjects such as grammar, pronunciation, vocabulary mastery, and the others.

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